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(54) Title of the Invention: FALL BOARD OF KEYBOARD MUSICAL INSTRUMENT

(54) Abstract

[Purpose] To provide a fall board of a keyboard musical instrument the height of which can be kept low at the time of opening without need of increasing its depth dimension.

[Constitution] There are provided subdivided front and rear halves, or a front lid 12 and a rear lid 13. The front lid 12 is connected to the rear lid 13 for rotation. The rear lid 13 is housed in the body 2 of the music instrument for sliding movement.

[Document Name] Claims

[Claim 1] A fall board of a keyboard musical instrument comprising subdivided front and rear halves, or a front lid and a rear lid, wherein the front lid is connected to the rear lid for rotation and the rear lid is housed in a body of the musical instrument for sliding movement.

[Claim 2] The fall board of a keyboard musical instrument according to Claim 1 further comprising guide means for guiding opening/closing of the front lid and the rear lid, wherein the guide means includes: a rotational arm attached at one end to the front lid and at the other end to the body of the musical instrument for rotation, for opening the front lid so as to serve as a music rack; and a slide-guide provided inside the body of the musical instrument for guiding sliding movement of the rear lid.

[Claim 3] The fall board of a keyboard musical instrument according to Claim 1 further comprising, in the body of the musical instrument, guide means for guiding opening/closing of the front and rear lids, wherein the guide means includes: a front slide-guide for guiding back-and-forth sliding movement of the front lid; and a rear slide-guide for guiding sliding movement of the rear lid; the front slide-guide having a guide width for allowing an half-opened state of the front lid, the front slide-guide having, at the rear end, a wider portion for allowing rotation of the front lid.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

The present invention relates to a fall board used in a keyboard musical instrument, such as an electronic piano.

[0002]

[Related Art]

FIG. 3 and FIG. 4 are sectional side views of electronic pianos with conventional fall boards. A fall board 30 shown in FIG. 3 is rotated about a pivot 31 provided at the rear end and opened in a leaning position slightly rearward from a vertical direction such that it also serves as a music rack. A fall board 40 shown in FIG. 4 is the so-called sliding lid, which is raised slightly at the front from the closed state, then pushed into a piano body 41 to be housed therein for opening.

[0003]

[Problem to be Solved by the Invention]

In the former fall board 30, since the whole fall board 30 is raised obliquely when opened, it looks unbalanced in terms of design quality especially in an electronic piano formed compact, and a player is possibly given an oppressive feeling because of the fall board blocking his/her forward visual field. In the latter fall board 40, since it is housed in the piano body 41 approximately horizontally when opened, the depth of the piano body 41 needs to be increased, causing a larger depth dimension of the electronic piano as a whole.

[0004]

In view of the foregoing, an object of the invention is to provide a fall board of a keyboard musical instrument the height of which can be kept low at the time of opening without need of increasing its depth dimension.

[0005]

[Means for Solving the Problem]

In order to achieve the foregoing object, the invention is directed to a fall board of a keyboard musical instrument comprising subdivided front and rear halves, or a front and a rear lid, wherein the front lid is connected to the rear lid for rotation and the rear lid is housed in the body of the musical instrument for sliding movement.

[0006]

In this case, the fall board further comprises guide means for guiding opening/closing of the front and the rear lids, the guide means is attached at one end to the front lid and at the other end to the body of the musical instrument. It is preferably constituted by a rotational arm for opening the front lid so as to serve as a music rack, and a slide-guide provided in the body of the musical instrument for guiding sliding movement of the rear lid.

[0007]

Also, the fall board further comprises, in the body of the musical instrument, guide means for guiding opening/closing of the front and rear lids. The guide means is constituted by a front slide-guide for guiding back-and-forth sliding movement of the front lid and a rear slide-guide for guiding sliding movement of the rear lid. The front slide-guide preferably has a guide width for allowing a half-opened state of the front lid and also has, at the rear end, an enlarged width portion for allowing rotation of the front lid.

[0008]

[Function]

The fall board of Claim 1 is opened, when the front lid is lifted slightly, followed by the rear lid being slid backward to be pushed into the body of the musical instrument and rotated such that it is raised up. In this case, the fall board is divided into two parts of a front half, or a front lid, and a rear half, or a rear lid. Thus, in the condition in which the front lid is set in a raised-up position so as to serve as a music rack, its height is approximately

as half as that of an ordinary rotational fall board. Also, in the condition in which the rear lid is housed in the body of the musical instrument, the housing space of the rear lid is approximately as half as that of an ordinary slide type fall board.

[0009]

According to the fall board of Claim 2, since the front lid is opened by the rotational arm and the rear lid is guided by the slide-guide to be opened, the fall board can be opened/closed smoothly, and the front and the rear lids in a closed state can be supported by these guide means.

[0010]

According to the fall board of Claim 3, the rear lid is guided by the rear slide-guide and slid backward to be opened, while the front lid is guided by the front slide-guide, then slid backward in a half-opened state, and rotated to be opened. In this case, since both the front and rear slide-guides are disposed inside the body of the musical instrument, they cannot be seen easily from the outside and a simplified structure can be effected.

[0011]

[Embodiment]

Now, an electronic piano will be described to which a fall board according to an embodiment of the invention is applied. FIG. 1 is a sectional side view of an electronic piano and the electronic piano 1 is constituted by a piano body 2 and two legs (not shown in the figure). The piano body 2 has an external shell formed of a pair of left and right side arms (side plates) 3, a top board 4, a key slip 5, a bottom 6, and a back plate 7, inside of which is housed a keyboard 8, a sounding device 9 and the like. At the front of the piano body 2 is provided a fall board 10, and the keyboard 8 is covered by the fall board 10.

[0012]

The fall board 10 is configured such that in addition to a fall

board body 11 made up of a front half, or a front lid 12, and a rear half, or a rear lid 13, there are provided a pair of left and right rotational arms 14 for guiding opening/closing of the front lid 12, and a pair of left and right slide-guides 15 for guiding opening/closing of the rear lid 13. The fall board body 11 has a structure of two subdivided front and rear parts, and the front lid 12 and the rear lid 13 are connected to each other for rotation with a hinge 16. The front lid 12 is bent downward at the forward end to cover the gap between the front lid and the key slip 5. The rear lid 13 is bent upward at the rear end to cover the gap between the rear lid and the top board 4.

[0013]

Each of the rotational arms 14 is formed in an L-shape, and fixed at one end to the rearward back side of the front lid 12 and at the other end to the inside face of the side arm 3 for rotation through a pivot 17. When the front lid 12 is lifted up to open the fall board body 11, the front lid 12 rotates about the pivot 17 of the rotational arm 14 and comes in abutment against the forward end of the top board 4, to be opened at a position where it also serves as a music rack. Though not specifically shown, on the inside face of the side arm 3 is provided a stopper of the rotational arm 14 and in a closed state of the fall board body 11 in which the rotational arm 14 abuts against the stopper, the front of the rear lid 13 is supported on the rotational arm 14 to withstand the force applied to the fall board body 11, and the front lid 12 and the rear lid 13 are supported flush with each other.

[0014]

Each of the slide-guides 15 is a guide groove with which a guide pin 18 attached to the rear of the rear lid 13 is engaged, and is formed in the inside face of the side arm 3 approximately horizontally. When the front lid 12 is lifted up to open the fall board body 11, the movement of the front of the rear lid 13 is restricted by the

rotational arm 14, while the movement of its rear is restricted by the slide-guide 15, and the front of the rear lid 13 is pushed into the piano body 2 in such a manner that it is raised temporarily. That is, with the fall board body 11 opened, the rear lid 13 is completely housed in the piano body 2 and the front lid 12 is set in place against the key slip 5 so as to serve as a music rack.

[0015]

In the fall board 10 described above, the fall board body 11 is divided into two parts, the front half, or the front lid 12, and the rear half, or the rear lid 13. Thus, when the fall board body 11 is opened with the front lid 12 set in place at the position of a music rack, the height of the fall board 11 is approximately as half as that of an ordinary rotational fall board. At the same time, with the rear lid 12 housed in the piano body 2, the housing space (depth) of the rear lid 13 is approximately as half as that of an ordinary slide type fall board. Therefore, the electronic piano 1 looks well balanced in terms of design quality during performance, and the depth dimension of the electronic piano 1 itself can be decreased. That is, the electronic piano 1 can be formed compact without impairing its design quality. The slide-guide 15 may be formed by, in place of the guide groove, a protruded member (rectangular material) on which the rear lid 13 can be mounted. Also, a guide roller may be used in place of the guide pin.

[0016]

FIG. 2 shows a fall board 10 according to a second embodiment. In this fall board 10, guide means is constituted by a front slide-guide 21 and a rear slide-guide 22, and the rotational arm 14 is eliminated. In this case, the front lid 12 is engaged at the rear with the front slide-guide 21 through a first guide pin 23, and the rear lid 13 is engaged at the front with the front slide-guide 21 through a second guide pin 24 and at the rear with the rear slide-guide 22 through a third guide pin 25. The rear slide-guide 22 is the same as the

slide-guide 15 in the first embodiment, and the front slide-guide 21 is formed wider than the rear slide-guide 22. The front slide-guide 21 includes a rear end portion formed wider to the top such that when the first guide pin 23 of the front lid 12 reaches to this position, the first guide pin 23 is allowed to rotate in the front slide-guide 21 about a hinge 16.

[0017]

That is, when the front lid 12 is pushed backward with its front lifted up to open the fall board body 11, the first guide pin 23 of the front lid 12 abuts the upper wall of the front slide-guide 21, and the front lid 12 is pushed backward in a half-opened state. At this time, the rear lid 13 is pushed into the piano body 2, with its front and rear guided by the front and rear slide-guides 21, 22, respectively. When the rear lid 13 reaches to a position where it is completely housed in the piano body 2, the first guide pin 23 reaches to the region of the front slide-guide 21 having a wider end portion, where the rear lid 13 is stopped and the front lid 12 is rotated to the position of a music rack.

[0018]

According to the second embodiment, as in the first embodiment, the electronic piano 1 can be formed compact without impairing its design quality, and the opening/closing structure of the fall board body 11 can be simplified.

[0019]

[Effect of the Invention]

According to the fall board of the present invention as described above, at the time when the fall board is opened, one of subdivided halves, or a front lid, is set in a raised-up position so as to serve as a music rack, and the other, or a rear lid, is housed in the body of the musical instrument. Thus, the height of the fall board can be kept low at the time of opening without need of increasing the depth dimension of the keyboard instrument, and the whole key board

instrument can be formed compact and well balanced in terms of design quality.

[Brief Description of the Drawings]

FIG. 1 is a sectional side view of an electronic piano with a fall board according to a first embodiment of this invention.

FIG. 2 is a sectional side view of an electronic piano with a fall board according to a second embodiment of this invention.

FIG. 3 is a sectional side view of an electronic piano with a conventional fall board.

FIG. 4 is a sectional side view of another electronic piano with a conventional fall board.

[Description of Reference Numerals]

1: electronic piano

2: piano body

8: keyboard

10: fall board

11: fall board body

12: front lid

13: rear lid

14: rotational arm

15: slide-guide

FIG. 1

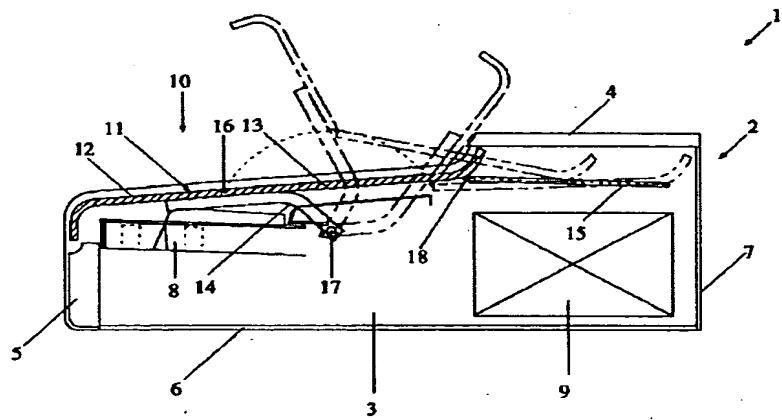


FIG. 2

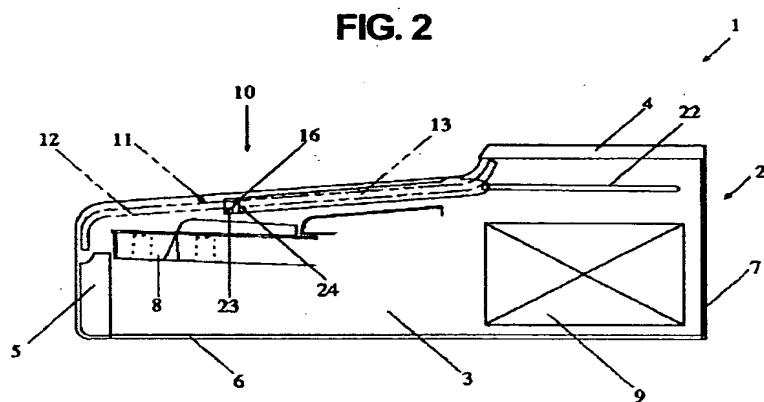


FIG. 4

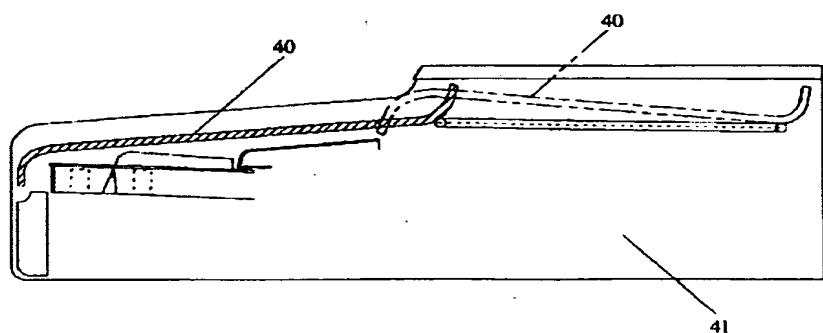


FIG. 3

